

REMARKS

The Office Action dated February 9, 2004 has been reviewed and carefully considered. Claims 3 and 4 have now been redrafted into independent form. In particular, claim 3 has now been redrafted into independent form as the new claim 1. Apparatus claim 6, corresponding to method claim 1, has now been amended to likewise incorporate the claim 3 subject matter. Claim 4 has now been redrafted into independent form as new claim 7. New claims 8 and 9 depend from new claim 7 and incorporate the limitations particular to claims 2 and 5. The dependency of claim 5 has now been updated from claim 3, which is now canceled, to claim 1. Claims 1-2 and 4-9 are pending, of which the independent claims are 1, 6 and 7. Reconsideration of the above-identified application, as amended and in view of the following remarks, is respectfully requested.

Claims 1-6 stand rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 6,236,764 to Zhou in view of U.S. Patent No. 5,796,875 to Read.

Claim 1, formerly claim 3, now recites:

said filtering step being applied to at least one pixel component of a selected segment of consecutive pixels located on a single line or column of the current picture and on both sides of a boundary between two blocks, so that the boundary divides the segment into two parts, wherein said filtering step is applied only if the pixels at the ends of said segment have chrominance components that agree with a similarity criterion, wherein said filtering step is applied only if the two pixels at the ends of a part of said segment have luminance components that agree with a similarity criterion

Although the Office Action does not specifically identify what in Zhou/Read corresponds to "said segment" of claim 1 of the present invention, item 5 identifies "said segment" as consisting of the two pixels $a_{0,7}$ and $b_{0,0}$ shown in FIG. 6 of

Zhou. Item 5 of the Office Action also identifies “said segment” as consisting of the two pixels “B” and “C” of FIG. 3 or Read. Therefore, no matter how Read is deemed to modify Zhou, “a part of said segment” in claim 1 of the present invention would presumably correspond to one of the two pixels in Zhou/Read. It is accordingly unclear what an “end” of a pixel is. More specifically, it is unclear what in Zhou/Read corresponds to “two pixels at the ends of a part of said segment” as explicitly required by the language of claim 1.

Item 5 of the Office Action suggests that “both pixels B and C in figure 3 of Read are at the end of one part of the segment,” but it is unclear what is meant here by “segment.”

On the one hand, the above quote from item 5 cannot be referring to just the two pixels B and C when it refers to a segment, as explained by the analysis above. Presumably, then that quote refers to pixels A, B, C and D as the segment.

Problematically, however, claim 1 of the present invention recites “said filtering step is applied only if the pixels at the ends of said segment have chrominance components that agree with a similarity criterion.” Since “the ends of said segment,” i.e., the segment consisting of pixels A, B, C and D, are pixels A and D, item 5 of the Office Action is, in effect, suggesting that the Zhou/Read filtering step is applied only if pixels A and D have chrominance components that agree. Those two pixels, A and D, however, are pixels merely used to implement the filtering (col. 4, lines 5-17). Pixels A and D are not compared. Nor do pixels A and D have chrominance components that are compared to a similarity criterion. In particular, Zhou/Read fails to disclose, suggest or feature:

said filtering step being applied to at least one pixel component of a selected segment of consecutive pixels located on a single line or column of the current picture and on both sides of a boundary between two blocks, so that the boundary divides the segment into two parts, wherein said filtering step is applied only if the pixels at the ends of said segment have chrominance components that agree with a similarity criterion, wherein said filtering step is applied only if the two pixels at the ends of a part of said segment have luminance components that agree with a similarity criterion

as explicitly required by the language of claim 1. Even by merely the above reasoning alone, the proposed rejection of claim 1 is invalid.

Moreover, the applicant fails to find any motivation for making the proposed combination of references.

Item 3 of the Office Action proposes to modify Zhou by substituting, for Zhou's own criteria for performing deblocking, the Read criteria for performing deblocking.

Item 5 of the Office Action cites as motivation that the Read methodology "produces simplified computations that are able to be carried out in real time (column 5, lines 2-10)." The cited passage from Read suggests sufficient bandwidth to implement a full feature video conference system.

The applicant notes, however, from Zhou "because the calculations of threshold and boundary values and the filtering algorithm are relatively simple, the processor 88 can operate on the boundaries fast enough for real-time applications such as the enhancement of HDTV video frames."

It is generally known to those of ordinary skill in the art that HDTV requires at least 18 megahertz, more than 10 times the bandwidth typically needed for video conferencing.

Thus, for example, the Read matrix inverse operation (col. 4, line 40), which represents an enormous processing load, and other Read operations the calculating of statistical expectation (col. 4, lines 42-54), make execution of the Read deblocking criteria slower than that of Zhou.

Moreover, Zhou's deblocking criteria methodology is directed to preserving visual quality by foregoing the filtering operation when the boundary is determined to not be blocky (col. 8, line 66 to col. 9, line 12).

Thus, in effect, the Office Action is suggesting that Zhou be modified, in view of Read, to sacrifice Zhou's visual quality and to make Zhou slower.

For at least all of the above reasons, motivation to modify Zhou in view of Read would not have existed. Accordingly, for this reason too, the rejection of claim 1 is invalid. Reconsideration and withdrawal of the rejection is respectfully requested.

Apparatus claim 6 corresponds to method claim 1, and has likewise been amended to include the subject matter of claim 3. For at least all of the above reasons, claim 6 is likewise deemed to be patentable over the applied references.

New claim 7 is a redrafting into independent form of the claim 4 to which the final Office Action responded.

Claim 7, formerly claim 4, recites:

said filtering step being applied to at least one pixel component of a selected segment of consecutive pixels located on a single line or column of the current picture and on both sides of a boundary between two blocks, so that the boundary divides the segment into two parts, wherein said filtering step is applied only if the pixels at the ends of said segment have chrominance components that agree with a similarity criterion, wherein said filtering step is applied only if, for each part of the segment, the two pixels at the ends of the part of said segment have luminance components that agree with a similarity criterion.

Comparing the underlined portions of the claim 7 with the underlined portions of claim 1, as shown and discussed above, it follows that the proposed Zhou/Read combination fails to meet the limitations of claim 7 for at least the same reasons set forth above with regard to claim 1. Nor is would there has been motivation for the combination, as discussed above.

New claims 8 and 9, dependent from claim 7, incorporate the limitations particular to claims 2 and 5, respectively. Accordingly, claims 8 and 9 are deemed to be patentable, at least due to their respective dependency from claim 7.

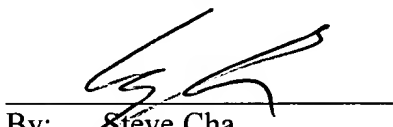
As to the other rejected claims, each depends from a base claim and is likewise patentable at least due to its dependency.

For all the foregoing reasons, it is respectfully submitted that all the present claims are patentable in view of the cited references. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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Date: 3/22/04

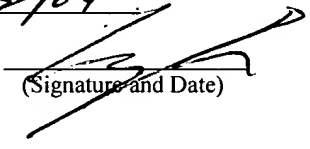

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